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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,551	07/23/2001	William G. Barker	21922.0007	3498

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EXAMINER

VALENTINE, DONALD R

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 06/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/910,551

Applicant(s)

BARKER ET AL.

Examiner

Donald R. Valentine

Art Unit

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-23 is/are allowed.
- 6) ☒ Claim(s) 24-30, 33-38, 40 and 41 is/are rejected.
- 7) ☒ Claim(s) 31, 32 and 39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All. b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 24, 29 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Tuller et al.

The reference shows apparatus with an anode layer, an electrolyte layer on an anode layer, a cathode layer on the electrolyte layer and interconnects to connect one electrochemical device with another electrochemical device which appears too be layered on the electrode. (See col. 8, lines 4-15, 37-45 and 64-67. As for claim 29, the reference discloses a “graded region” which would be considered a “buffer layer” because it provides for a compositional change between elements. Regarding claim 36, the reference electrolyte is inherently “a mixed ion and electron conductor”.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 24, 26, 30, 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiao '727.

The reference shows an apparatus comprising an anode layer (20), an electrolyte layer (30), a cathode layer (40) and interconnect layers (50). (See col. 2, lines 25-67). As for claim 26, the reference discloses an electrolyte layer comprising yttria stabilized zirconia (see 2, lines 29-35).

The reference does not recite "thin film electrochemical devices", but does disclose ranges of about 0.002 inches to 0.030 inches for each of the respective anode, cathode and interconnects.

It would be considered within the skill of the art to use the apparatus of the reference as a "thin-film electrochemical device", because the reference discloses elements, which have relatively thin thicknesses, which could be construed as "thin film" in nature.

6. Claims 24-30, 36-38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minh et al.

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The reference shows an apparatus comprising an anode (24), an electrolyte (28), a cathode (26) and interconnect layer (32). (See col. 3, lines 15-60).

With reference to claim 29, a buffer layer is shown. (See col. 6, lines 28-50).

The reference does not recite "thin film electrochemical device" but does mention in the background of the invention that anodes, cathodes and electrolyte in fuel cells are thin, layered corrugated structures. (See col. 1, lines 14-20).

It would be considered within the skill of the art to use the apparatus of the reference as a "thin-film electrochemical device", because the reference discloses a combination of elements, which form a fuel cell as well as teaching such cells as being within the context of "thin".

7. Claims 24-27, 30, 36-37 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiao '520.

The reference shows an apparatus comprising an anode layer (20), an electrolyte layer (30), a cathode layer (40) and interconnect layers (50). (See col.3, lines 1-8).

As for claims 25-27 and 37, the reference appears to disclose the anode, cathode electrolyte and interconnect composition claimed. (See col. 3, lines 35-42).

The reference does not recite "thin film electrochemical devices", but does disclose layer thicknesses, which would be considered as being "thin". (See col. 3, lines 4-9).

It would be considered within the skill of the art to use the apparatus of the reference as a "thin-film electrochemical device", because the reference discloses a combination of elements, which form a fuel cell (an electrochemical device) as well as teaching such cells as being within the context of "thin".

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8. Claims 24, 29-30, 33-34, 36 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiao '486.

The reference shows (claims 24 and 29) a fuel cell (electrochemical device) with an electrolyte layer (30) between anode (20) and cathode layer (40), buffer layer(s) (45) and interconnect layer (50). (See col. 2, lines 10-26 and 59-67 and col. 3, lines 1-25).

Disclosed are porous electrocatalyst electrode layers (col. 4, lines 12-17). The reference does not recite "thin film electrochemical devices", but does disclose layer thicknesses, which would be considered as being "thin". (See col. 4, lines 3-9).

It would be considered within the skill of the art to use the apparatus of the reference as a "thin-film electrochemical device", because the reference discloses a combination of elements, which form a fuel cell(s) (an electrochemical device(s)) as well as teaching such cells as being within the context of "thin".

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 40-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are dependent upon an apparatus claim. A claim cannot be both method and apparatus; it must be clear by its wording that it is drawn to one of the other of these two mutually exclusive statutory classes of invention. See *Exparte Forsyth et al.* 151 USPQ 55.

*Allowable Subject Matter*

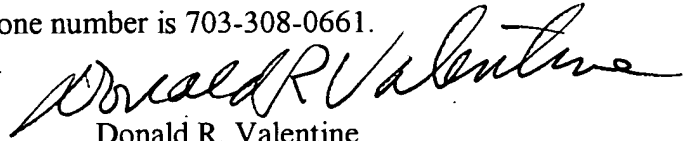
11. Claims 1-23 are allowed.
12. Claims 31-32 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
13. The following is a statement of reasons for the indication of allowable subject matter:  
The references of record do not show or suggest a method of forming an anode layer, applying an electrolyte layer to one face of the anode layer and around the anode layer's edges, applying a cathode layer to a portion of the exposed face of said electrolyte layer, leaving a gap extending from the edge of the face radially inward, applying an interconnect layer to said anode layer covering the entire exposed surface of the anode layer and applying an interconnect layer to the cathode layer and to the remaining exposed electrolyte layer covering the exposed surface of the electrolyte layer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald R. Valentine whose telephone number is 703-308-3327. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in cursive script, reading "Donald R. Valentine".

Donald R. Valentine  
Primary Examiner  
Art Unit 1742

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June 23, 2003